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FEDERAL - STATE COOPERATIVE
SNOW SURVEYS and WATER SUPPLY FORECASTS
for

ARIZONA

UNITED STATES DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE

Nata in lide in this report were obtained by the gancy named bove in oo er tion with the Fe eral, State and local organizations listed on the last page of this report.

APR. 1, 1957

UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

Snow surveys in the west are conducted each year at more than 1200 snow courses. Basin and Province or State snow survey reports summarizing the results of the measurements and forecasts of seasonal runoff and water supply are issued by the Soil Conservation Service, U. S. Department of Agriculture and some of its coperators; the Water Rights Branch of the British Columbia Department of Lands and Forests; and the California Division of Water Resources.

Copies of the various federal-state cooperative snow survey reports listed below may be secured by writing to:

Head, Water Supply Forecasting Section Soil Conservation Service 209 S. W. 5th Avenue Portland 4, Oregon

BASIN REPORTS:

S

	Colorado, Rio Grande, and Platte-Arkansas River Basins	Issued monthly February through May by SCS and Colorado Experiment Station, Fort Collins, Colorado.*
	Columbia River Basin	Issued monthly January through May by Soil Conservation Service, Boise, Idaho.*
	Upper Missouri River Basin	Issued monthly February through May by SCS and Montana Agricultural Experiment Station, Bozeman Montana.*
		Issued April 1 by Soil Conservation Service and Co- operators, Portland, Oregon.
[7	TATE REPORTS:	
	Arizona	Issued semi-monthly January 15 through April 1 by SCS and Salt River Valley Water Users Association, Phoenix, Arizona.*
	Nevada	Issued monthly February through April by SCS and Nevada State Engineer, Reno, Nevada.*
	Oregon	Issued monthly January through May by SCS, Portland,

Washington Issued monthly February through May by SCS, Spokane,
Washington, and State Department of Conservation and
Development.*

cultural Experiment Station.

*Special reports are issued as needed.

Oregon, and Oregon Agricultural Experiment Station.*

City, Utah, and State Engineer of Utah and Utah Agri-

The British Columbia reports are issued February | through June 1 and may be secured from Comptroller, Water Rights Branch, Department of Lands and Forests, Parliament Building, Victoria, B. C.

The California reports are issued monthly February 1 through May 1 and may be secured from Division of Water Resources, California Department of Public Works, Sacremento, California.

The annual water supply forecasts of the Weather Bureau are available in monthly bulletins published from January through May. These bulletins entitled, "Water Supply Forecasts for the Western United States" may be obtained from River Forecast Center, Weather Bureau, 712 Federal Office Building, Kansas City 6, Missouri.

COOPERATIVE SNOW SURVEYS AND WATER SUPPLY FORECASTS

for

ARIZONA

(Salt, Verde, Gila and part of Lower Colorado River Basin)

Issued

April 1, 1957

Report Prepared

by

George Watt, Snow Survey Supervisor Soil Conservation Service 39 North Sixth Avenue Phoenix, Arizona

Issued by

Salt River Valley Water Users! Association

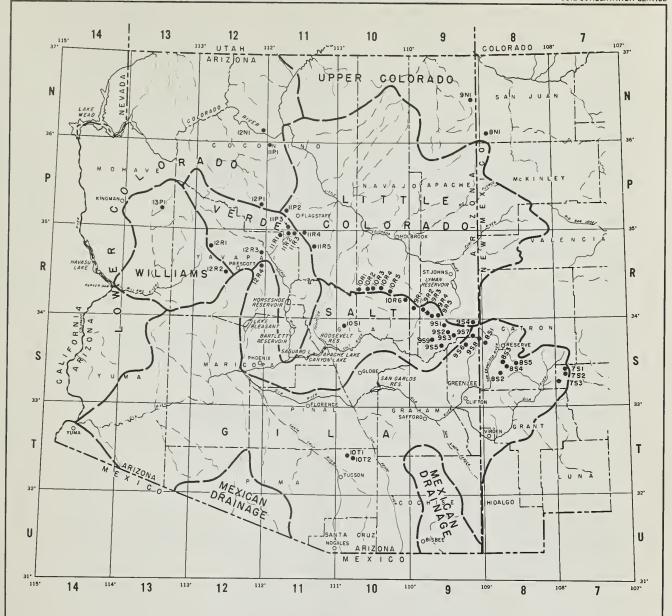
and

Soil Conservation Service

Robert V. Boyle
State Conservationist
Soil Conservation Service

Victor I. Corbell
President
Salt River Valley Water Users! Assn.



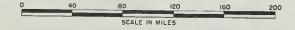


LEGEND

DRAINAGE BASIN BOUNDARY
13U2 • SNOW COURSE

ARIZONA COOPERATIVE SNOW SURVEYS

SNOW COURSES AND DRAINAGE BASINS
JANUARY 1956



INDEX TO SNOW COURSES

NUMBER	* NAME	SEC	TWP	RGE**	ELEVATION	RIVER BASIN
11-P-3	Antelope Park	29	19N	8E	7300	Verde # Discontinued
9 - S -1	Baldy (p)	28	7N	27E	9000	Salt-Little Colorado
10-T -1	Bear Wallow	6	125	16E	8100	Gila
9-S -6	Beaver Head	13	4N	30E	8000	Salt-Frisco
9-5-3	Big Lake Knoll	2	5N	28E	8800	Salt-Frisco-Little Colorado Discontinued
7 - S -3	Black Canyon	8	135	11W***	6790	Gila
12-N-1	Bright Angel	34	33N	3E	8400	Lower Colorado
12-R -1	Camp Wood	3	16N	6W	5700	Williams-Verde
10-R -3	Canyon Creek (s)	18	11N	15E	7500	Salt
11 - R -2	Casner Park (s)	19	18N	8E	6950	Verde
12-P-1	Chalender (s)	27	22N	3E	7100	Verde
8-5-3	Corner Mountain	7	105	17W***	8850	Gila-Frisco
9-5-9	Corn Creek (p) La	1.33°4	5'N. Lo	na . 109 ⁰ 45'W	/. § 7730	Salt
9 - S-7	Coronado Trail	26	5N	30E	8000	Salt-Frisco
10-R -2	Elk	31	11N	14E	7600	Salt-Little Colorado Discontinued
10-R -6	Forest Dale (s)	2	9N	21 E	6000	Salt-Little Colorado
11-P-2	Fort Valley	22	22N	6E	7350	Verde #
9-R -5	Ft. Apache	18	7N	27E	9160	Salt-Little Colorado
8-5-1	Frisco Divide	31	65	20W***	8000	Frisco-Gila
12-R -4	Gaddes Canyon	11	15N	2E	7600	Verde #
10~R −5	Gentry	36	11N	15E	7600	Salt-Little Colorado
11-P-1	Grand Canyon	21	30N	4E	7500	Lower Colorado
11-R -5	Happy Jack	30	17N	9E	7630	Verde
10-R -4	Heber (p)	28	11N	15E	7600	Salt-Little Colorado
7-S-2	Inman	6	115	10W***	7800	Gila
12-R -2	Iron Springs	22	14N	3W	6200	Williams-Verde
9 - S -2	Maverick Fork (s)(p		6N	27E	9050	Sait-Little Colorado
9-R -4	McKay Peak	13	7N	24E	8250	Salt Not read
9-R -2	McNary (s)	14	8N	23E	7200	Salt-Little Colorado
9-R-1	Milk Ranch	28	8N	23E	7000	Salt
12-R -3	Mingus Mountain	3	15N	2E	7100	Verde #
8 - S-2	Mogollon	2	115	19W***	7000	Frisco-Gila
11-R-4	Mormon Lake	13	18N	8E	7350	Verde #
11-R-3	Mormon Mountain(18N	8E	7500	Verde
11-R-1	Munds Park (s)	7	18N	7E	6500	Verde
8-5-4	N-Bar Lake	16	105	17W***	8600	Gila
0 3 .	ry bur Euro	10	103	17 11	2000	
8 - S - 5	Negrito	6	105	16W***	8200	Gila
9-S -4	Nutrioso	23	6N	30E	8500	Salt-Frisco-Little Colorado
9 - S -5	Pacheta	§ At to	own of M	laverick, Ari	z. 7800	Salt
9-N-1	Roof Butte	15	8N	6W****	8500	Little Colorado # Not read
10-T -2	Rose Canyon	15	125	16E	7300	Gila
0 0	Charles I in -		45	21\4/***	9000	Gila-Frisco
9-S -8	State Line	6 20	6S	21W*** 10W***	8000 7850	Gila
7-S -1	Taylor Creek	20 5	10S 7N	24E	7850 6400	Salt Not read
9-R -3 8-N-1	Trout Creek Washington Pass Lo					Little Colorado Not read
13-P -1	Willow Ranch	л. 3000 16	21N	ng.106-50-W	5000	Williams
10-1-1	TTITOW NUITET	10	2114	1144	5000	TTTTTGIIIS
10-R -1	Woods Canyon	15	11N	13E	7640	Salt-Little Colorado Discontinued
10-S-1	Workman Creek	33	6N	14E	6900	Salt

^{*} Number indicates location of course within coordinate rectangle, thus 9-N 1 is Course #1 in coordinate rectangle 9-N.

^{**} All in Gila and Salt River Base and Meridian except where otherwise indicated.

^{***} New Mexico Principal Meridian.

^{****} Navajo Base.

^{*} On adjacent drainage.

⁽s) Soil Moisture Station installed on or in vicinity of course.

[§] Unsurveyed.

⁽p) Storage gage installed on or in vicinity of course

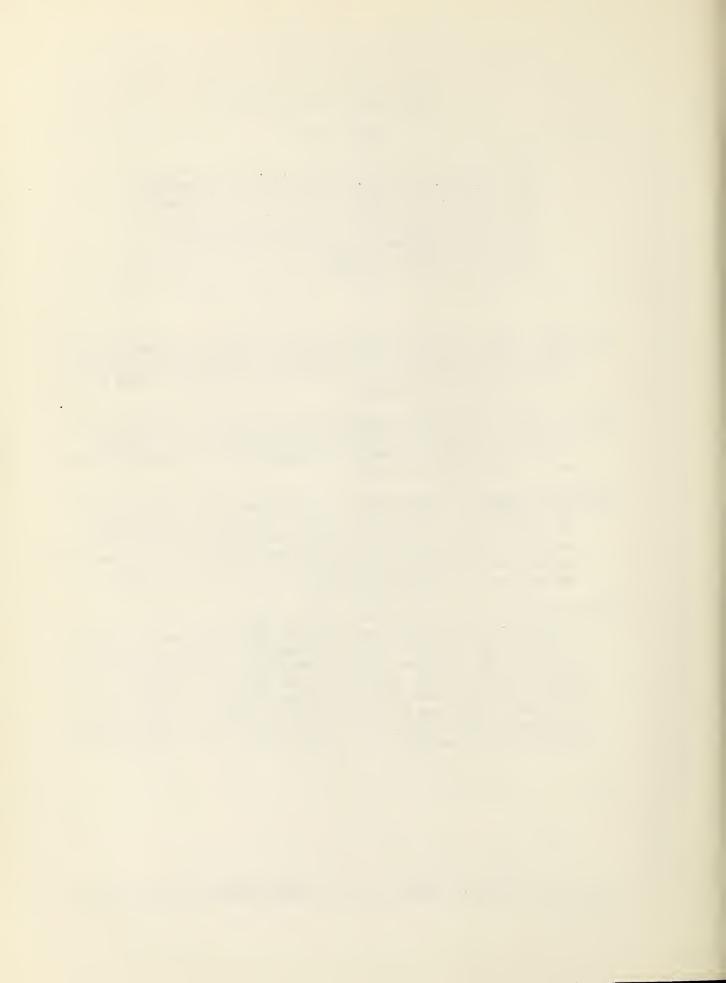
ARIZONA WATER SUPPLY OUTLOOK

April 1, 1957

*	* *	* 3	÷ *	* .	* *	* *	*	* *	*	*	*	*	*	*	*	*	*	*	*	*	*
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*	wit)	n tl	ne (ear	ly i	uno	ff,	wi	11	Ca	aus	se	ve	ry	- 1	OV.	J A	\pr	il		*
*	May	rui	nof:	f u	nles	s t	her	e a	re	he	a	ЛУ	Ap	ri	1	ra	air	ns.			℀
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24	26 26	36 3	4 36	١.	35 35	* *	ع د	26 36	35	35	2%	34	*	×	36	36	*	35	75	35	-×-

- SNOW COVER: There still remains some snow on the White Mountains and on the North Rim of the Grand Canyon. All other snow courses, however, reported no snow. Snow fall that occurred since the last reading has all melted.
- SOIL MOISTURE: Soil moisture stations still show the soil to be at field capacity for the four foot soil profile. There hasn't been any recording of moisture withdrawal by the vegetation on any of our stations as yet.
- RESERVOIRED WATER: Stored water in the Salt and Verde River systems is 68 percent of a 15-year average for this time of year and 30 percent of capacity. The little available water that was caught in the San Carlos Reservoir has been used and the reservoir is about empty. The Carl Pleasant Reservoir is 72 percent of average and 15 percent of capacity.
- STREAM FLOW: Although runoff for April through May in the Salt and Verde River systems is expected to be only 27 percent of average, it will bring the runoff for the January through May season to 68 percent of average. Most of the runoff came from the January precipitation and the following heavy January and February runoffs. The Upper Gila and San Francisco Rivers are forecasted to flow only 17 percent of average for the months of April and May, which would bring the January to May winter season to 26 percent of the 15 year average.

This is the final Snow Survey and Water Supply Forecast Bulletin for this year.



STREAM FLOW FORECASTS - APRIL 1, 1957

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature during the forecast period will be near average. Appreciable deviations from normal of temperature and/or precipitation during the forecast period will correspondingly modify these forecasts.

	SEASONAL STREAM FLOW IN THOUSANDS OF ACRE FEET FORECAST PERIOD APRIL - MAY, INCLUSIVE									
BASIN, STREAM AND STATION	Forecast Runoff 1957	Percent 15-Year Average		red Ru 1955	15-Year Average 1938-52					
Calt Dinam at Tutal	۳۵ ۵	00	(0.0	00.7	00 (7.52				
Salt River at Intake	50.0	29	60.9	22.1	00.0	173.9				
Tonto River above Roosevelt	2.5	18	2.0	1.2	4.9	13.9				
Verde River above Horseshoe	20.0	26	18.4	19.0	44.9	77.7				
Gila River at Virden	3.5	16	2.5	3.2	7.4	22.3				
Frisco River at Clifton	4.5	18	3.9	3.9	6.5	23.6				
Little Colorado River above Lyman Dam 1/2/	0.6	8		0.2	1.1	7-4				

^{1/} Average is for less than 15 years of record in the 1938-52 period.

^{2/} Forecast period for Little Colorado River above Lyman Dam is for April - June, inclusive.



STATUS OF RESERVOIR STORAGE - APRIL 1, 1957

			USABLI	E STORAGE -	1000 ACRE 1	
BASIN and/or STREAM	RESERVOIR	USABLE CAPACITY 1000s AF	1957	1956	1955	15-Year Average 1938-52
Agua Fria	Lake Pleasant 1/	163.8	24.4	27.4	22.9	33.9
Colorado	Lake Havasu 1/	688.0	639.2	616.3	630.0	578.3
Colorado	Lake Mohave 1/	1,810.0	1,689.7	1,717.7	1,755.3	1,113.9
Colorado	Lake Mead	27,207.0	11,502.0	10,720.0	11,558.0	18,493.0
Gila	San Carlos	1,205.0	0.2	53.6	20.4	205.9
Verde	Bartlett 1/	180.0	122.7	67.6	57.4	75.9
Verde	Horseshoe 1/	143.0	57.5	5.11	1.2	31.3
Salt	Roosevelt	1,381.6	159.5	229.2	401.1	516.9
Salt	Apache	245.1	162.1	230.7	242.7	194.5
Salt	Canyon	57.8	50.1	56.6	55.6	43.7
Salt	Saguaro	69.8	62.7	66.1	68.1	43.5
Little Colorado	Lyman 1/	30.6	0.4	8.8	1.9	9.3
Little Colorado	Show Low Lake	5.1	0.4	0.5	0.2	70 m) to

^{1/} Average is for less than 15 years of record in the 1938-52 period.



SUMMARY OF APRIL 1, 1957 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHED

	No. of Courses	Snow Depth	Sn		er Con	Snow Density	1957 Water Content in		
WATERSHEDS	in Average	1957 Inches	1957	1956	1955	1938-52 Average	1957 Percent		ent of Avg.
Gila River	7	0	0.0	0.0	0.0	0.6			
Salt River	10	2	1.0	0.2	0.5	2.2	50	500	45
Verde River	6	0	0.0	0.0	0.0	3.6			
Williams River	2	0	0.0	0.0	0.0	0.0			
Lower Colorado Riv	ver 3	9	4.3	1.0	2.3	4.2	48	430	102
Little Colorado Ri	iver 8	1	0.5	0.3	0.6	4.2	50	167	12



				S.	NOW COVE	NFASI	UREVEN	тs	
			-	1957	MOW GOVE	t rinko	_	T RECORD	
DRAINAGE BASIN			Date	Snow	Water	Water	the second second second second	nt (In.)	Previous
and			of		Content			1938-52	Yrs. of
SNOW COURSE	No.	Elev.	Survey	(In.)	(In.)	1956	1955	Average	Record
GILA RIVER Nutrioso Bear Wallow 2/3/ Frisco Divide State Line Coronado Trail Beaver Head Taylor Creek 2/ Inman 2/ Rose Canyon 2/3/ Mogollon 2/3/ Black Canyon 2/3/	954 10T1 8S1 9S8 9S7 9S6 7S1 7S2 10T2 8S2 7S3	8500 8100 8000 8000 8000 8000 7850 7800 7300 7000 6790	4/1 3/31 4/1 4/1 4/1 4/1 4/1 4/1 4/1 4/1	0 0 0 0 0 0 0 0 0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.6 2.2 0.6 0.6 1.5 1.0 0.1 0.7	19 9 19 19 19 15 11 9 4
SALT RIVER Ft. Apache 1/2/ Baldy 1/2/ Maverick Fork 2/ Nutrioso 1/ Coronado Trail Beaver Head Pacheta 2/3/ Gentry 2/3/ Heber 2/3/ Canyon Creek 2/3/ McNary 1/2/ Milk Ranch 2/ Workman Creek 2/ Forest Dale 2/	9R5 9S1 9S2 9S4 9S7 9S6 9S5 10R5 10R4 10R3 9R2 9R1 10S1 10R6	9160 9125 9020 8500 8000 7800 7600 7500 7200 7000 6900 6430	3/30 3/30 3/30 4/1 4/1 4/1 Repor 3/30 3/30 3/30 4/1 4/1 4/1	10 0 14 0 0 0 t Dela 0 0 0	3.9 0.0 6.7 0.0 0.0 0.0 yed 0.0 0.0 0.0	2.3 0.0 T 0.0 0.0 0.0 0.4 0.6 0.9 0.0 0.0	4.3 0.0 T 0.3 0.0 0.0 0.0 0.0 0.0	6.7 4.9 1.5 0.6 1.5 1.0 4.9	7 7 7 19 19 19 5 4 4 18 16 5 18
VERDE RIVER Happy Jack 2/3/ Gaddes Canyon 2/3/ Mormon Mountain 2/ Mormon Lake 1/2/ Fort Valley 1/2/ Hingus Mountain 2/ Chalender 2/3/ Casner Park 2/3/ Munds Park 2/3/ Iron Springs 1/2/ Camp Wood 2/	11R3 11R4 11P2	7630 7600 7500 7350 7350 7100 7100 6930 6500 6200 5700	Repor 4/1 3/29 3/29 3/31 4/1 Repor 3/29 4/1 4/1	t Delag	0.0 0.0 0.0 0.0	0.0 T 0.0 0.0 0.0 0.0 T 0.0 0.0	0.0 T 0.0 0.0 0.0 0.0 0.0 0.0	3.4 11.1 8.4 1.9 0.0 2.8 0.0	5 3 5 10 10 10 10 10 4 4 11

^{1/} On adjacent drainage.

^{2/} All averages are for less than 15 years of record in the 1938-52 period.

^{3/} Not included in watershed average.



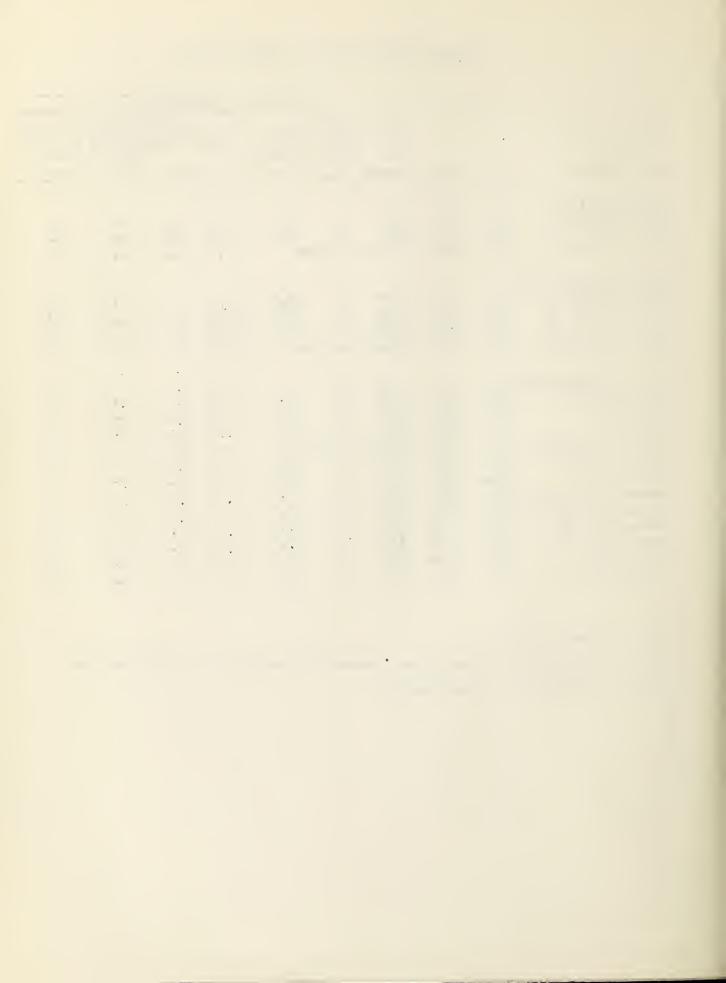
ARIZONA SNOW SURVEYS - APRIL 1, 1957

					SNOW COV	R REASUREMENTS				
				1957			PAS'	r RECORD		
DRAINAGE BASIN			Date	Snow	Water	Water	Conte	nt (In.)	Previou	
and			of	Depth	Content	endonth company			Yrs. of	
SNOW COURSE	No.	Elev.	Survey	(In.)	(In.)	1956	1955	Average	Record	
WILLIAMS RIVER			١ /=							
Iron Springs 2/	12R2	6200	4/1	0	0.0	0.0	0.0	0.0	11	
Camp Wood 1/2/	12R1	5700	4/1	0	0.0	0.0	0.0	0.0	11	
Willow Ranch 2/3/	13P1	5000	Report	ретау	ea	0.0	0.0	0.0	11	
LOWER COLORADO RIVI	מי									
Bright Angel 2/	12N1	8400	3/30	27	12.9	2.9	7.0	0.3	10	
Grand Canyon 2/	11P1	7500	3/30	0	0.0		0.0	9•3 1•5	10	
Fort Valley 2	11P2	7350	3/31	Ö	0.0	0.0	0.0		10	
Chalender 1/2/3/	12P1	7100	Report			0.0	0.0	1.9 2.8	10	
		1 100	opo o	Domag	-	0.0	0.0	2.00	10	
LITTLE COLORADO RI	VER									
Ft. Apache 2/	9R5	9160	3/30	10	3.9	2.3	4.3	6.7	7	
Baldy 2/	981	9125	3/30	0	0.0	0.0	0.0	4.9	7	
Nutrioso	984	8500	4/1	0	0.0	0.0	0.3	0.6	19	
Happy Jack 1/2/3/	11R5	7630	Report	Delay	ed		0.0	3.4	5	
Gentry 2/3/	10R5	7600	3/30	0	0.0	0.4	0.0		4	
Heber 2/3/	10R4	7600	3/30	0	0.0	0.6	0.0	***	4	
Canyon Creek 2/3/	10R3	7500	3/30	0	0.0	0.9	0.0		4 4 5	
Mormon Mountain 2/		7500	3/29	0	0.0	T	0.0	11.1	5	
Mormon Lake 2/	11R4	7350	3/29	0	0.0	0.0	0.0	8.4	10	
Fort Valley 2/	11P2	7350	3/31	0	0.0	0.0	0.0	1.9	10	
McNary 2/	9R2	7200	4/1	0	0.0	0.0	0.0	0.2	18	
Forest Dale 2/	10R6	6430	4/1	0	0.0	0.0	0.0	0.0	18	

^{1/}On adjacent drainage.

^{2/} All averages are for less than 15 years of record in the 1938-52 period.

^{3/} Not included in watershed average.



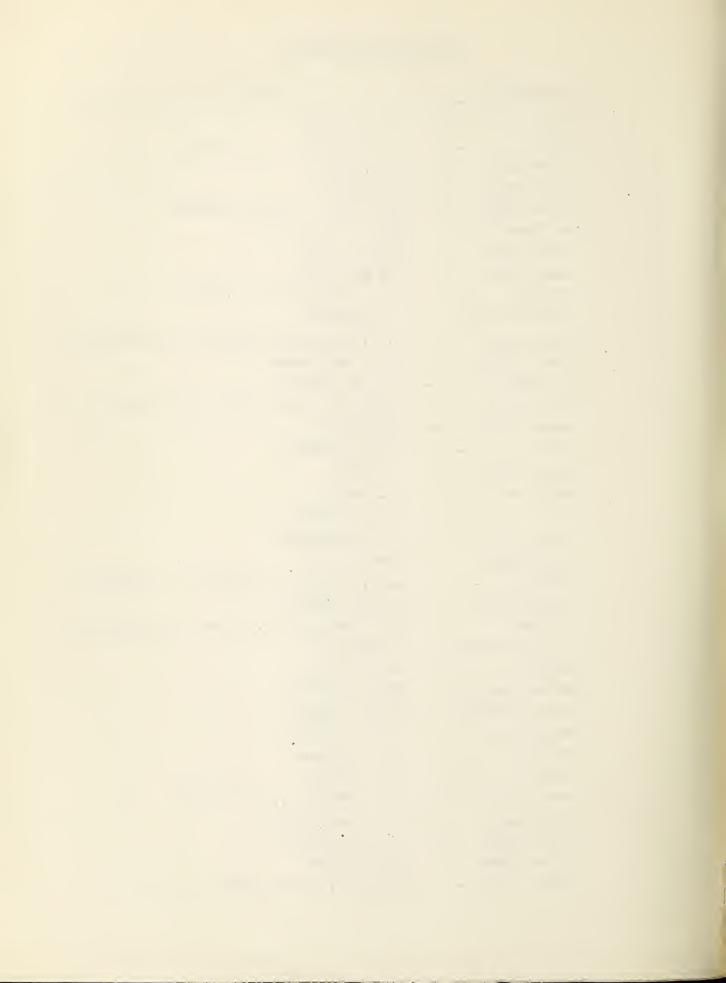
ARIZONA SNOW SURVEYS - DELAYED REPORTS RECEIVED SINCE LAST BULLETIN (MARCH 15, 1957)

DRAINAGE BASIN			SNOW	COVER MEASUREMENTS	- 1957
and			Date of	Snow Depth	Water Content
SNOW COURSE	No.	Elev.	Survey	(Inches)	(Inches)
VERDE RIVER					
Camp Wood	12R1	5700	3/15	0.0	0.0



LIST OF SNOW SURVEYORS

SNOW COURSE	SURVEYOR
Baldy	SCS and SRVWUA
Bear Wallow	A. F. Rea and J. R. Brinkley
Beaver Head	N. A. Josh
Black Canyon	Wayne Black
Bright Angel	Dee Bridges and George Epple
Camp Wood	Mrs. C. C. Merritt
Canyon Creek	SCS and SRVWUA
Casner Park	SCS and SRVWUA
Chalender	M. C. Oleson and T. A. Roll
Coronado Trail	J. D. McAdams
Forest Dale	R. E. Robinson, A. Valverde & R. Endfield
Frisco Divide	K. R. Weissenborn
Ft. Apache	SCS and SRVWUA
Fort Valley	Rocky Mt. Forest & Range Exp. Station
Gaddes Canyon	Richard Enz
Gentry	SCS and SRVWUA
Grand Canyon	J. Lynch
Happy Jack	Emil Ryberg
Heber	SCS and SRVWUA
Inman	C. H. McCauley
Iron Springs	Ernest Saxby
McNary	R. E. Robinson, A. Valverde & R. Endfield
Maverick Fork	SCS and SRVWUA
Milk Ranch	R. E. Robinson, A. Valverde & R. Endfield
Mingus Mountain	Richard Enz
Mogollon	J. R. Wray
Mormon Lake	SCS and SRVWUA
Mormon Mountain	SCS and SRVWUA
Munds Park	SCS and SRVWUA
Nutrioso	J. D. McAdams
Pacheta	Foch Phillips
Rose Canyon	A. F. Rea and J. R. Brinkley
State Line	K. R. Weissenborn
Taylor Creek	C. H. McCauley
Willow Ranch	Tiny Miller
Workman Creek	Rocky Mt. Forest & Range Exp. Station



The following organizations cooperate in the Arizona snow survey work:

FEDERAL

Department of Agriculture Soil Conservation Service

Forest Service
Apache Forest
Coconino Forest
Goronado Forest
Gila Forest
Kaibab Forest
Prescott Forest
Rocky Mountain Forest and Range Experiment Station

Department of Commerce
Weather Bureau
Arizona Station

Department of Interior

Bureau of Reclamation Region III

Geological Survey
Arizona District

Bureau of Indian Affairs Fort Apache Reservation

National Park Service Grand Canyon National Park

Gila Water Commissioner Safford, Arizona

IRRIGATION PROJECTS:

Salt River Valley Water Users' Association Phoenix, Arizona

San Carlos Irrigation and Drainage District Coolidge, Arizona

SOUTHWEST LUMBER MILLS, INC., McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.





Federal - State - Private COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"